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- Addresses:* All authors: Field Guides Incorporated, P.O. Box 160723, Austin, Texas 78716, U.S.A.

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## A review of the northern *Pheucticus* grosbeaks

by Allan R. Phillips

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The essential unity and interdependence of biological data are well illustrated by migratory birds like the North American *Pheucticus* grosbeaks. Species limits depend not only on structure and colours, but also on life histories (including nests and eggs), ecology, habits, vocalizations and responses thereto, and the attendant frequency of crossing. In assessing geographic races, times of migration may mislead us.

Adult males of the black, red, and white eastern Rose-breasted Grosbeak *Pheucticus ludovicianus* cannot be confused with the mainly black, brown, and yellow western and southern Black-headed Grosbeak *P. “melanocephalus”*. Almost unanimously they have been called distinct species. Breeding in Temperate woodlands, their main summer ranges are widely separated by the mostly-herbaceous Great Plains. But along rivers, crosses or hybrids were known, and have proven common in at least one area: “Both members of the pair were hybrid in 64% of the cases” (Anderson & Daugherty 1974: 6, vs. p. 9). Similarity of voice and biology led us (Phillips *et al.* 1964) to unite the forms as “Common Grosbeak” *P. ludovicianus*, with each retaining its established English name. Though P. Unitt (*in litt.*) finds a vocal difference, I have not perceived it, and surely the resemblances are more striking.

But *melanocephalus* is still called a species or “semispecies”. Some authors (Paynter 1970: 219; Anderson & Daugherty 1974: 9) consider that forms are conspecific only if interbreeding is completely random. Others (Cracraft 1983, etc.; Rising 1983; recommended for “serious consideration” by American Ornithologists' Union [A.O.U.] 1983: xix) call all populations with “separate evolutionary histories” species. (How many of these “phylogenetic species” of *Homo* ride any large city's metro or subway train?)

Seeing no valid evidence that these grosbeaks are good biological species, I now suggest the comprehensive species be called Black-hooded Grosbeak—a name appropriate to both forms and very similar to one's name. It is not in use elsewhere and should not cause confusion—especially if the classic “Abeillé's Grosbeak” is restored to *Coccothraustes (Hesperiphona) abeillei*, bringing its scientific and English names again into agreement. But I again urge continued use of Rose-breasted and Black-headed Grosbeak, Myrtle and Audubon's Warblers, Baltimore and Bullock's Orioles, Slate-colored and Oregon Juncos, etc. Even at the risk of mistaking an occasional individual, especially if aberrant (Paxton *et al.* 1976: 46), science should not retreat from clarity and precision.

### *Geographic variation: problems and needs*

In migratory animals, accurate analysis of geographic variation requires distinguishing locally breeding individuals from non-breeding migrants. American birds were long thought to move gradually, so that by May northern breeders would have left Mexico, etc. (see for example van Rossem 1931). This simple idea is often wrong; see Phillips (1951, 1986, 1991), particularly on *Catharus* spp. It was well disproved, for numerous species, by the extensive researches of the University of Minnesota group in southeastern Veracruz, summarized by Ramos (1983).

We showed (Phillips *et al.* 1964) that *Pheucticus*'s migrations almost span the summer. Thus whether individuals are breeding locally must be determined by behaviour, ecology, state of gonads, amount of fat, and in other species moult. One cannot safely assume even mid-June to early July *Pheucticus* to be local breeders without biological data. Were such data on labels, van Rossem (1931: 292) might not have written that “The Saric series [=13 specimens from northernmost Mexico, 11 May to 13 Aug.] is, as a whole, certainly referable to the small-billed form. Only those from Saric are breeding birds.” But there are no pine woods near Saric; if scattered grosbeaks do breed there, they would surely be of the larger-billed form that breeds nearby at higher altitudes in Arizona. Griscom (1934: 411) was evidently similarly confused: “Breeding specimens from Nuevo León, Tamaulipas and Guerrero” had bills intermediate between these two forms. (A similar case is that of the Western Flycatcher *Empidonax difficilis* [including *occidentalis*, etc.]; see Phillips *et al.* 1964 and Phillips 1991: xxxiii–xxxiv.)

It is thus incumbent on collectors and preparators to minimize later errors by conscientiously recording habitats and physiological and other details. Not only sex and age must be recorded as exactly as possible. See also Winker *et al.* (1991).

### *Sex and age variation*

Correct determination of age/sex classes is often difficult in worn or badly shot birds. Many worn female Black-headed Grosbeaks cannot be sorted by age. Nor are they easily told from young males. These, in the first basic plumage, seem to differ most consistently by more

extensive, visible whitish bases to the (outer) primaries and more tawny in the rump (less plain greyish fuscous). (Females average more streaked below, and nearly all have clear white superciliaries.)

Males with top and sides of head wholly black are not necessarily older than those with striped heads. Young males often approach full adult body colouration in their first year. A captive, apparently hatched in 1983, acquired these colours in the spring of 1984, but moulted back to a striped head late that summer (L. D. Yaeger *in litt.*).

### *Geographic variation in colour*

This is slight or absent in adult male Black-headed Grosbeaks. There may be tendencies to reduced white in the tail in at least southeastern Mexico (Veracruz, Oaxaca) and in the middle wing-coverts in Nuevo León; but these would hardly identify migrants. (Some males with less white in the tail seem to be subadults.)

The scarcer useful material of other age/sex classes also shows little variation over most of the range. But the few breeding females from central Mexico (Morelos, probably west to Guanajuato) are more blackish above, with these markings more extensive; and the one from Nuevo León (DEL 23481) is decidedly the brightest yellow on the breast (medially) and upper belly. Similarly, immature males from northeastern Mexico show at least a tendency to deep, bright colouration below. Further collecting and careful study are needed; some yellow tones on the head seem to fade rapidly in the museum.

### *Size*

General size (chord of wing, tail, and weight) averages larger in the Rocky Mountain region than in California, but with wide overlap (Table 1). Most authors see no taxonomic value here; it hardly warrants calling Rocky Mountain birds "larger, particularly of wing, tail, and bill" (Aldrich, in Jewett *et al.* 1953: 598, without measurements). Northeastern Mexican birds are no larger, and indeed may average shorter in extent (wing-span), but they are evidently somewhat heavier. This agrees with their swollen bills and presumably larger heads.

The smallest birds, in the southernmost populations (southern Oaxaca and Guerrero), may prove separable if further collecting of definitely breeding birds reinforces their distinctness and shows differences in weight and/or skeletal measurements.

Present recognition of subspecies rests entirely on bill size. But most of this variation is somewhat mosaic, not clinal. No sooner did Grinnell name a smaller-billed race from California than Ridgway (1901: 620) synonymized it. Miller (1957: 332) upheld it "in view of the prevailing large-billed characteristics of the breeding birds (K-d) [=RTM] of the Mexican mainland". But this was over-simplified. The Moore collection is especially rich in birds from Sinaloa, where the breeding grosbeaks are indeed rather large-billed; but even a hasty visit, in 1964, showed me that 5 breeding males from Cerro Teotepec, Guerrero, were

TABLE 1  
Measurements (mm) of male Black-headed Grosbeaks<sup>a</sup>

Region, age	n	Wing chord	Tail	Bill				
				exposed culmen	depth <sup>b</sup>	from nostril	gonys	width <sup>c</sup>
Colorado, adults	16-27	97.5 <sup>d</sup> , 101.5-106, 106.5	(76) <sup>e</sup> , 78-83.5	16-18	13.5-14.5 <sup>f</sup>	12.2, 12.6-14	11-12.3	11.6, 12-12.7
Colorado, immatures	10	97, 99.5-104, 104.5	76+, 77.5-81, 85.5	—	—	—	—	—
S. California, adults <sup>g</sup>	?	94, 94, 96-104	—	—	—	—	—	—
<i>P. l. rostratus</i> , adults <sup>h</sup>	4	101-104.5	78-82	18, 18.4-19.2	14.7, 15 <sup>i</sup>	13.3, 14.8-14.9	12, 12.5-13	13-13.4 <sup>j</sup>
<i>P. l. rostratus</i> , immatures <sup>k</sup>	3	98-100	78.5-79	17.5-18.7	14.3 ± -15.3	13.2-13.5	11.5, 12.1, 12.2	11.8, 12.4, 13
C. to S.E. Mexico, adults <sup>l</sup>	7	94.5, 98-102.5 [+?]	76-80.5	16.9-18+	12.8 <sup>?</sup> , 13.5-?	12, 12.7-13.3, 14.3	11-12.3	10.9, 11.2-12.4, 12.7
S. Guerrero, adults	—	93.7[±?]-99.2	74[±?]-78.2+ 17, 18-19[+?]		13.2-14	12.7-14	10.9[-?]-12	11.2-11.7

## Notes

a. Exceptional (?) measurements are set off by commas; + indicates wear, damage, or incomplete growth.

b. Depth from top of maxilla, basally, to malar apex.

c. Maximum width at base.

d. Found dead in Denver, 1 Aug; evidently migrant "*maculatus*".

e. The short-tailed ones probably subadult or "*maculatus*", somewhat worn.

f. Two males with depth 14.7 and 14.9 evidently have bills improperly closed.

g. Migrants?; *vide* J. R. Northern.

h. S. Coahuila to Jaumave, S. Tamaulipas.

i. Two males with depth 15.2 and 15.9 have bills improperly closed.

j. One with mandible 12.5 ± had it shot.

k. Nuevo Leon and adjacent Coahuila, Sep, Aug, Mar.

l. S. Hidalgo and State of México to Veracruz and C. Oaxaca; the short wing and narrow bill are from S. Hidalgo.

TABLE 2  
Weights (g) of normal Black-headed Grosbeaks<sup>a</sup>

Region and source	Males (n)	Females (n)
Colorado (mostly M. K. Waddington)	41.9–48.2 (1=51?) (9)	45.6–50.1; to 51.4 [laying?] (5)
Southern California <sup>b</sup>	35–46 (18)	37–48.8 (15)
Arizona to Sonora (& Nayarit, 1♂), migrants (A. R. Phillips)	37.3–46.2 (5)	41.6–44.8 (very fat), 49.5 (moderately fat) (6)
Durango (R. S. Crossin, DEL; no fat)	39.5, 48 (2)	44, 46 (2)
Northern Morelos (A. R. Phillips; little fat)	—	45.6 (egg just laid) (1)
Nuevo León and adjacent Coahuila <sup>c</sup>	48.6, 49.3, 50.5[—] (3)	54 (1)

a. Weights considered reliable; birds with little or no fat, save as noted.

b. Probably includes fat birds; ex J. Sheppard & C. Collins, *fide* Western Bird-Banding Association 1971.

c. Males young, June, March, and August, A. R. Phillips; female May, ova to 2 mm, no fat, R. S. Crossin, DEL.

decidedly smaller. In 4 the gonys was at least 0.5 mm shorter than in 4 of 5 breeding males from northeastern Sinaloa (the fifth was a first-year male). Ridgway (1901) found Mexican females to be smallest, also, but whether these were breeding is uncertain.

Other central and southern Mexican populations are also small-billed. Birds of Michoacán seem particularly small, and should be compared to Tlaxcala specimens (MEXU). But Idaho males are not large-billed, whereas 3 females from Shasta County, California (US), are. Thus from southern and western Mexico north and west, small-billed populations are spaced too irregularly to recognize *maculatus*.

The above comparisons apply to adults. Heavy bills require some time to reach full size (see for example Parkes 1974: 458). It was thus surprising that even quite young males from northeastern Mexico had distinctly larger bills than any birds from elsewhere.

Bill size is not simply a matter of length and depth. Volume or swelling is apparent to careful, open-eyed inspection, whether or not it is easily and consistently measured by different persons with different calipers. Nature's truths are seen by close inspection—in this case direct comparisons—not by discarding perception in favour of statistics or other fads.

### Subspecies

Through 1910 the Black-headed Grosbeak was generally considered monotypic. Then Oberholser (1919) separated Ridgway's largest birds (Arizona to Wyoming) as *Hedymeles m. papago*. A.O.U. (1931) accepted this, but gave it no winter range; while *H. m. melanocephalus* wintered



to Chiapas (where in fact Black-headed Grosbeaks remain unrecorded; Alvarez del Toro 1980).

In 1932 and 1934 van Rossem transferred the name *melanocephalus* to the larger race; Kinnear informed him that the bill of Swainson's type was like the larger of two (unspecified) adult males that van Rossem had sent. Kinnear's bill measurements van Rossem called "intermediate"; but in fact the only one comparable to Ridgway's (exposed culmen) agreed exactly with Ridgway's average of the smaller (California) males. (Van Rossem's later measurement was of the "total culmen" of most ornithologists, not their "exposed culmen").

Later check-lists (A.O.U. 1957, Miller 1957, Paynter 1970) accordingly called the smaller Pacific birds *maculatus* (Audubon), named from western Oregon. (It supposedly wintered south to Mitla, central Oaxaca.) But as noted by Paynter, this was "a very weak race". The slightly larger-billed birds of the southern Rocky Mountains and northwestern Mexico merely approach somewhat.

### ***Pheucticus ludovicianus rostratus* subsp. nov.**

*Description.* Bill largest; typically, both mandible and maxilla are more swollen than other races. Colours as in *melanocephalus*, but female and immature apparently brightest below, most richly coloured. Body larger (heavier)?

*Distribution.* Breeds (mainly resident?) in the oak-pine mountains of Nuevo León and adjacent states (Coahuila, Tamaulipas), northeastern Mexico. In winter to lower levels and to southeasternmost Tamaulipas (Tampico, AMNH; casually?) and probably south in mountains to western Veracruz and Guerrero (see below).

*Type.* First-year male, southeast of Monterrey, Nuevo León (near south foot of Cerro de la Silla at Rancho El Mezcal, c. 10 km east of El Canelo; thus east of Presa R. Gómez=Pres de la Boca); 6 March 1982.

*Measurements of type.* Length (extreme, in flesh) 212, extent 311, wings (chord) 99.5 & 100.5, tail 78.5, exposed culmen 18.7, bill from nostril 13.5, depth at anterior edge of nostril 13, depth to malar apex 15.3, gonys 12.1, maximum width of mandible (at base) 13 mm. Weight 49.3 g, very little fat. Skull apparently fully ossified.

*Material examined.* Nuevo León: adult males, Mesa de Chipinque, above Monterrey, 8 February and 28 March; "Boquillo", 3 & 4 June; "San Pedro Mines", 10 May. Immature males, mountains south of Monterrey, 15 September; southeast of Monterrey (type), 6 March. Female, westernmost Nuevo León, 8 May. Tamaulipas: adult male, Jaumave, 6 June. Male, "Victoria", 19 April. Female, Tampico, 18 December Coahuila: adult male, Sierra de Guadalupe, 27 April (not typical?). Immature males, easternmost and northernmost Coahuila, 9 August & 7 September. See also Remarks.

*Remarks.* Breeding birds of southwestern Texas (Davis Mts., especially AMNH) seem variable; the northern Coahuila (Sierra del Carmen; US) male would doubtless be *rostratus* when grown. (In the westernmost bird, from Sierra de Guadalupe, the base of the mandible was shot.)

A first-year male from La Joya de Salas, southern Tamaulipas, with a long but less swollen bill (DEL), may indicate the southern limit of *rostratus* influence. Otherwise all Nuevo León and Tamaulipas birds seen are *rostratus* except an apparent migrant male, March (Cerro de la Silla, near Monterrey; US).

The Guerrero female, moulting heavily on head and neck (southeast of Chilpancingo, April), is decidedly duller than the Nuevo León female, an adult; its bill is also smaller, but it seems to be a first-year bird. It will probably prove to be within the range of variation of *rostratus*, as its bill is near the size of Nuevo León (and Jaumave) males.

The Veracruz male (immature, south of Altogonga, 4 Jan.; DEL) resembles *melanocephalus* with a wide mandible (13.2 mm at base), but was very heavy (55 g; little fat). If the bill is full-grown, it is probably intermediate.

In collections from south of Tamaulipas, *rostratus* should naturally be scarce. Even if largely or wholly migratory, its total populations are far smaller than those of *melanocephalus* and "*maculatus*".

*Migrations.* Rocky Mountain region birds commonly migrate farther south than do their relatives on the Pacific slope or in Mexico. Logically, early grosbeak specimens (including various types) from central Mexico would have bills like Rocky Mountain birds (van Rossem 1934). I have seen such birds from south to beyond Chilpancingo, Guerrero (fat male adult, 6 May, San Roque, near Acahuizotla; wing 105 [some wear]; CANA). The southeastern limits of migrants are in Oaxaca, as a "Rare winter visitant in Atlantic Region, and doubtless elsewhere" (Binford 1989). I have not seen these specimens.

If Pacific *maculatus* were recognized, its migrations would be problematical, due to the small breeding birds of central and southern Mexico. But the small-billed Idaho birds, with long wings (adult males 106.2, 106.5; DEL), doubtless migrate far south.

In summary, knowledge of grosbeaks' biology, mating, vocalizations, ecology, and migrations is essential. Over-rigid species concepts, reliance on dates and general localities, and poorly labelled material have misled authors in general at both levels of species and subspecies. Rose-breasted and Black-headed Grosbeaks form a single biological species; an appropriate name would be Black-hooded Grosbeak, which would be appropriate for both rose-breasted and black-headed forms, as well as for individuals not typical of either.

Variation in colour and size, including bill size, is too slight or geographically irregular, in most of the range of the Black-headed Grosbeak, to form recognizable races, at least on presently available material. The only exception is the swollen-billed race of northeastern Mexico (possibly heaviest and, in females and immatures, brightest below), here named *rostratus*; it may or may not be largely resident. Birds breeding in southern Mexico may prove separable. Slight colour differences between females and young males are pointed out. Supposed migration from Pacific U.S.A. to Chiapas is erroneous, and to Oaxaca dubious.

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Specimens were lent by the late J. S. Rowley and Texas Tech University, and in my final studies at Denver (1991) by Delaware and U.S. National Museums. Mainly, however, I relied on my own series, now partially in the Canadian Museum of Nature (CAN); I was helped in assembling this by H. García F., R. Phillips F., S. Romero H., A. M. Sada, and J. S. Weske. To all of these I extend my thanks; also to L. D. Yaeger, who informed me of a quite unexpected moult, as above. For helpful comments on the manuscript I thank C. R. Preston, D. W. Snow and P. Unitt.

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*Address:* Allan R. Phillips, Dept. of Zoology, Denver Museum of Natural History, City Park, Denver, Colorado 80205, U.S.A.; present address Reforma 825-A, Col. Chapultepec, San Nicolás de los Garza 66450, Nuevo León, México.

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## Natal pterylosis of some neotropical thrushes (Muscicapidae: Turdinae)

by Mark C. Wimer & Charles T. Collins

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For many neotropical passerines, there are large gaps in our knowledge of natal pterylosis. In addition, descriptions of natal downs (neossoptiles) are often based on examination of small numbers of specimens (Collins 1990). One way to increase sample sizes is to make quantitative counts of neossoptiles on living nestlings in the field on an opportunistic basis, or as part of other studies when collection of specimens would be disruptive. As part of an ongoing study of natal pterylosis in neotropical passerines (Collins 1973, Collins & Bender 1977, Collins & McDaniel 1989) we present here data on six species of turdine thrushes, with a comparison of counts made from preserved specimens in the lab and living nestlings observed in the field.

Counts of natal downs were made from 13 specimens of four *Turdus* thrushes. In addition, field counts were made from two of these four species of *Turdus* and two other turdine species. All individuals were in early stage A of Wetherbee (1957) with no sign of pin feathers erupting.

Two specimens of Bare-eyed Thrush *Turdus nudigenis* from one nest were collected on 19 July 1964, and six specimens of Cocoa Thrush *T. fumigatus* from two nests were collected on 19 May and 18 July 1964, all in the Arima Valley, Trinidad. Two specimens from one nest of White-throated Thrush *T. albicollis* were collected on 2 July 1972, and three specimens of Pale-breasted Thrush *T. leucomelas* from one nest were collected near Rancho Grande, Estado Aragua, Venezuela. Specimens were examined under a binocular dissecting microscope and numbers and distribution of downs recorded (Table 1). Field counts for all species were made between April and June 1972 near Rancho Grande on newly hatched chicks as part of a study of growth rates (see Ricklefs 1976: 206–7). These field counts were made with a hand lens on 16 chicks of Pale-breasted Thrush, two of White-throated Thrush, two of Yellow-legged Thrush *Platycichla flavipes*, and one of Andean solitaire *Myadestes ralloides* (Table 3).

Total neossoptile counts from specimens ranged from 32 to 112 for individual *Turdus* nestlings (Table 1), with an average of 61 for